

Mammals in urban centers: a dataset from the perspective of the media in Brazil

Carolina Alves^{1,2}, Wellington Hannibal^{1,2,3}

¹ Laboratório de Ecologia e Biogeografia de Mamíferos, Universidade Estadual de Goiás, Avenida Brasil, Setor Helio Leao, Quirinópolis, GO, Brazil

² Programa de Pós-Graduação em Biodiversidade Animal, Universidade Federal de Goiás, Avenida Esperança, Chácaras de Recreio Samambaia, Goiânia, GO, Brazil

³ Programa de Pós-Graduação em Ambiente e Sociedade, Universidade Estadual de Goiás, Avenida Brasil, Setor Helio Leao, Quirinópolis, GO, Brazil

Corresponding author: Wellington Hannibal (wellingtonhannibal@gmail.com)

Abstract

The continuous growth of the urban population, coupled with habitat loss, has resulted in unanticipated interactions between animals and humans in urban centers. In this study, we investigated the presence of mammals in urban centers through newspaper reports on websites. Specifically, we examined: i) the frequency of photographic records, ii) the temporal trends (2001 to 2021) and spatial trends (Brazilian Federative regions and states) of the records, and iii) the orders, families, and species most frequently reported in urban centers. On the Google platform (<http://www.google.com.br>), we used combinations of the keywords “mammals in urban centers,” “mammals found in the city”, and “mammals found in the municipality” to survey mammal records. We excluded repeated news items, sites that experienced technical problems during the search period, and those that did not cover the topic. We compiled a total of 733 websites. The records spanned from 2002 to 2021, with 73% occurring in the last four years. The Southeast, South, and Midwest regions stood out. The animals recorded belonged to 55 mammal species (16 vulnerable and 3 endangered), distributed in 22 families and 10 orders. The data indicate that the majority of mammal sightings in urban areas occur on streets, with some conflictual interactions. This is the first study that utilizes websites for diagnosing the mammal fauna present in urban centers in Brazil. The dataset generated here could aid in understanding the occurrence of mammal species in the urban environment.

Key words: Carnivora, data paper, Ocelot, photographic records, São Paulo state, south-eastern region



Academic editor: Nilton Cáceres

Received: 11 June 2024

Accepted: 21 November 2024

Published: 15 January 2025

ZooBank: <https://zoobank.org/EE062176-D6FC-4AEE-A5BE-86662EC24EDC>

Citation: Alves C, Hannibal W (2025) Mammals in urban centers: a dataset from the perspective of the media in Brazil. ZooKeys 1223: 319–332. <https://doi.org/10.3897/zookeys.1223.129408>

Copyright: © Carolina Alves & Wellington Hannibal. This is an open access article distributed under terms of the Creative Commons Attribution License (Attribution 4.0 International – CC BY 4.0).

Introduction

Cities emerged thousands of years ago, and urban sprawl has led to a disruption in human-environment interaction (Seto et al. 2017; Perry et al. 2020). Continuous population growth and the demand for more resources alter and transform natural habitats, resulting in negative consequences for biodiversity (McDonald et al. 2013; Schenk and Souza 2014; Start et al. 2020); these consequences include the reduction of genetic diversity, threats from pathogens, the spread of exotic and invasive species, air, noise, and light pollution, as well

as the alteration of natural hydrological regimes and fires (Theodorou 2022). Furthermore, population growth has been identified as one of the main causes of species and population extinction at a global level (Ceballos and Ehrlich 2002; Ceballos et al. 2010, 2015).

Ever since humans began living in settlements, wildlife has visited these places and found resources, such as shelters, food scraps, and garbage for food (Ceballos and Ehrlich 2002). As a result, there is an increase in the frequency of contact and complexity of the human-fauna relationship (Aronson et al. 2014). Species that were previously not observed in urban areas have been reported, even in cities with high population densities (Prezoto and Vale 2019). However, when wild species pose a threat to people and their livelihoods, this relationship can become conflictual (Zimmermann et al. 2010). In Brazil, conflicts between animals and humans have increased due to the migration of fauna from natural and rural areas to suburban and urban areas (Marchini and Crawshaw 2015).

Encounters and interactions between humans and animals have consequences for both. People are susceptible to zoonoses and economic damage, while animals face risks such as vehicle collision, entanglement, and attacks by domestic animals (Taylor-Brown et al. 2019). The frequency of recording wild animals in urban centers can be associated with local physical factors or the urban landscape, such as the presence of green areas, parks, waterways, and the often-practiced urban tree planting (Bateman and Fleming 2012; Van Bommel et al. 2020). Identifying these factors is important for formulating public policies and mitigating conflicts (Basak et al. 2020).

In this study, we investigated the presence of mammals in urban centers through newspaper reports and other communication networks on websites. Specifically, we examined: i) the frequency of photographic records, ii) the temporal trends (2001 to 2021), and spatial trends (Brazilian Federative regions and states) of records, and iii) the orders, families, and species most frequently reported in urban centers.

Metadata

Data set identity

Title: Mammals in urban centers: a dataset from the perspective of the media in Brazil.

Data set identification code: BRAZIL_SM_loc.csv, BRAZIL_SM_rec.csv, BRAZIL_SM_ref.csv, and BRAZIL_SM_int.csv.

Data set description

Principal investigators:

Carolina Alves, Laboratório de Ecologia e Biogeografia de Mamíferos, Universidade Estadual de Goiás, Quirinópolis, GO, Brazil; carolinaalvesp97@gmail.com; ORCID: Carolina Alves (0000-0003-0501-3532).

Wellington Hannibal, Laboratório de Ecologia e Biogeografia de Mamíferos, Universidade Estadual de Goiás, Quirinópolis, GO, Brazil; wellingtonhannibal@gmail.com; ORCID: Wellington Hannibal (0000-0001-7141-1243).

Overall project description

Identity: Compilation of mammals' occurrence in urban centers, providing city, state and region of records, and richness, composition and threatened category data.

Period of study: The data presented were collected from 2002 to 2021, and the process of organizing and producing the current data set took place from 2021 to 2024.

Objectives: Our goal was to gather detailed information about mammal records in urban centers from Brazil, focusing on i) spatial trends of records (city, state and region); and ii) frequency in taxonomic records (orders, families and species) in urban centers of Brazil.

Specific subproject description

Site description: Brazil is a country of continental proportions, with a territorial extension of 8,510,345.540 km² (Instituto Brasileiro de Geografia e Estatística IBGE 2022), encompassing six climatic types: Equatorial, Semi-arid, Tropical, High-altitude Tropical, Atlantic Tropical, and Subtropical (Ministério do Meio Ambiente MMA 2022). Brazil is home to more than 100,000 animal species, encompassing mammals, birds, amphibians, fish, reptiles, insects, and invertebrates that inhabit forests, mangroves, savannahs, fields, rivers, and lakes across the following biomes: Amazon, Caatinga, Cerrado, Pantanal, Atlantic Forest, and Pampa (IBGE 2022, MMA 2022). The Brazilian mammal fauna consists of 778 species distributed across 11 orders, 51 families, and 247 genera (Abreu et al. 2022).

Data collection: The data were obtained from online media outlets, including news sites, videos, blogs, and government websites. We searched for potential studies in the following sources: (i) Google Search engine, (ii) social networks, (iii) newspapers, and (iv) government websites (city halls, state halls, and organizations such as the Fire Department and Military Police websites). We conducted a search for news stories using the following phrases: "mammals in urban centers", "mammals found in the city", "mammals seen in urban centers" and "mammals seen in the municipality" in Portuguese. Additionally, we employed a combination of keywords like the "common name of the species" (e.g., puma, capybara, monkey) along with the phrase "found in urban centers", also in Portuguese.

Research criteria: We included in this database only news items that specifically reported the appearance of wild mammals in urban centers. From these sites, we extracted the following information: i) presence of a photo or video, ii) date, iii) city and state of the record, iv) geographic coordinates of the record and/or city, v) scientific name and main taxonomic categories (genus, family, and order), vi) name of the species reported on the site, and vii) title of the news item.

Taxonomic nomenclature was based on the updated checklist of Brazilian mammals by the Taxonomic Committee of the Brazilian Society of Mammalogy (Abreu et al. 2022). We identified the species using field guides and books on mammals in Brazil, as well as the species' distribution areas according to the IUCN Red List. (Bonvicino et al. 2008; Reis et al. 2011; Nascimento and Feijó 2017; Faria et al. 2019; Azevedo et al. 2021; Menezes et al. 2021; Rumiz et al. 2022; IUCN 2022). We added a column with the current scientific name based on the aforementioned literature. However, due to the lack of a photo or

video, the poor quality of the image or footage, and the existence of a species complex for the same genus at the cited site, some species were identified only at the genus level, followed by “sp.” or “spp.” In these cases, we filled in the cell in the ‘Actual_species_name’ column with the genus, followed by “sp.”.

Data set status and accessibility

Data verification: All localities were checked for accuracy and precision. The taxonomic status of the species was verified by the authors. In the bibliographic records, the taxonomic update was made based on the most recent literature. Carolina Alves conducted the searches and analysis of websites for inclusion in this dataset, carefully evaluating which ones met the inclusion criteria. Wellington Hannibal analyzed the dataset and created the figures. The data were mostly derived from news websites and newspapers, and we sought to correct any errors in taxonomic information about the species.

Accessibility

Storage location and medium: Available as Supporting Information to this Ecology Data Paper in .csv format (https://figshare.com/articles/dataset/_b_MAMMALS_IN_URBAN_CENTERS_a_dataset_for_Brazil_b_/26616214).

Contact person: Wellington Hannibal, Laboratório de Ecologia e Biogeografia de Mamíferos, Universidade Estadual de Goiás, Quirinópolis, Goiás, 75860-000, Brazil. E-mail: wellingtonhannibal@gmail.com

Copyright restrictions: None

Proprietary restrictions: Please cite this data paper when using it in publications. We also request that researchers and teachers inform us of how they are using the data.

Costs: None.

Data set file

BRAZIL_SM_loc.csv

BRAZIL_SM_rec.csv

BRAZIL_SM_ref.csv

BRAZIL_SM_int.csv

Format and storage mode: comma-separated values (.csv).

Header information: See Table 1 in section B for column descriptions.

Tables and figures

Table 1. Description of columns of .csv files;

Table 2. Systematic list of mammals’ species in urban areas of Brazil.

Figure 1. Number of photographic, temporal and spatial records of mammalian species in urban areas of Brazil;

Figure 2. Geographic distribution of mammal occurrence records in Brazilian urban areas, categorized by federative regions;

Figure 3. Number of records by families of mammals in urban areas of Brazil;

Table 1. Description of columns of .csv files.

BRAZIL_SM_loc.csv	
id	Code given to each locality
Municipality	Municipality of the locality
State	State of the locality
Lat	Decimal coordinates of the locality
Long	Decimal coordinates of the locality
Datum	Geodetic coordinate system
Coordinates Location	Reference from where the coordinates were obtained
Biomes	Biomes from where the coordinates were obtained
BRAZIL_SM_rec.csv	
id	Code given to each locality
Month	Month when the record was published
Year_Publication	Year when the record was published
Order	Order taxonomic classification
Family	Family taxonomic classification
Genus	Genus taxonomic classification
Species_name_on_site	Species name published on website
Actual_species_name	Species name according taxonomic classification
Species_origin	Origin of species
Record_Type	Type of record, photography, video
BRAZIL_SM_ref.csv	
id	Code given to each locality
Site_Name	Name of the site where record was published
Type_Site	Category of the site where the record was published
Link	Link to website
BRAZIL_SM_int.csv	
id	Code given to each locality
Location	Exact location where the animal was found
Rescueorganization	Agency responsible for the rescue
Destination	Release or sent for rehabilitation
Interactions	Whether there was human-wildlife interaction
Injuries	Whether there was an injury or not
Zone	Encounter in rural, urban, or peri-urban area
deceased	The animal died

Figure 4. Number of records by species of mammals in urban areas of Brazil;
Figure 5. Collector’s curve showing species accumulation with increasing sampling effort across urban areas.

Results description

This dataset comprises 733 records of 450 mammal locations found in urban centers across Brazil, as reported on various websites. Of the total number of records, 89% (*N* = 652) included an image or video, spanning the period between 2002 and 2021, with a noticeable increase in the number of records in the last five years (Fig. 1). The Southeast (41%, *N* = 302), South (25%, *N* = 182), and Midwest (18%, *N* = 129) regions had the highest number of records, particularly in the cities of São Paulo, Minas Gerais, Mato Grosso do Sul, Rio Grande do Sul, Rio de Janeiro, Santa Catarina and Paraná (Figs 1, 2).

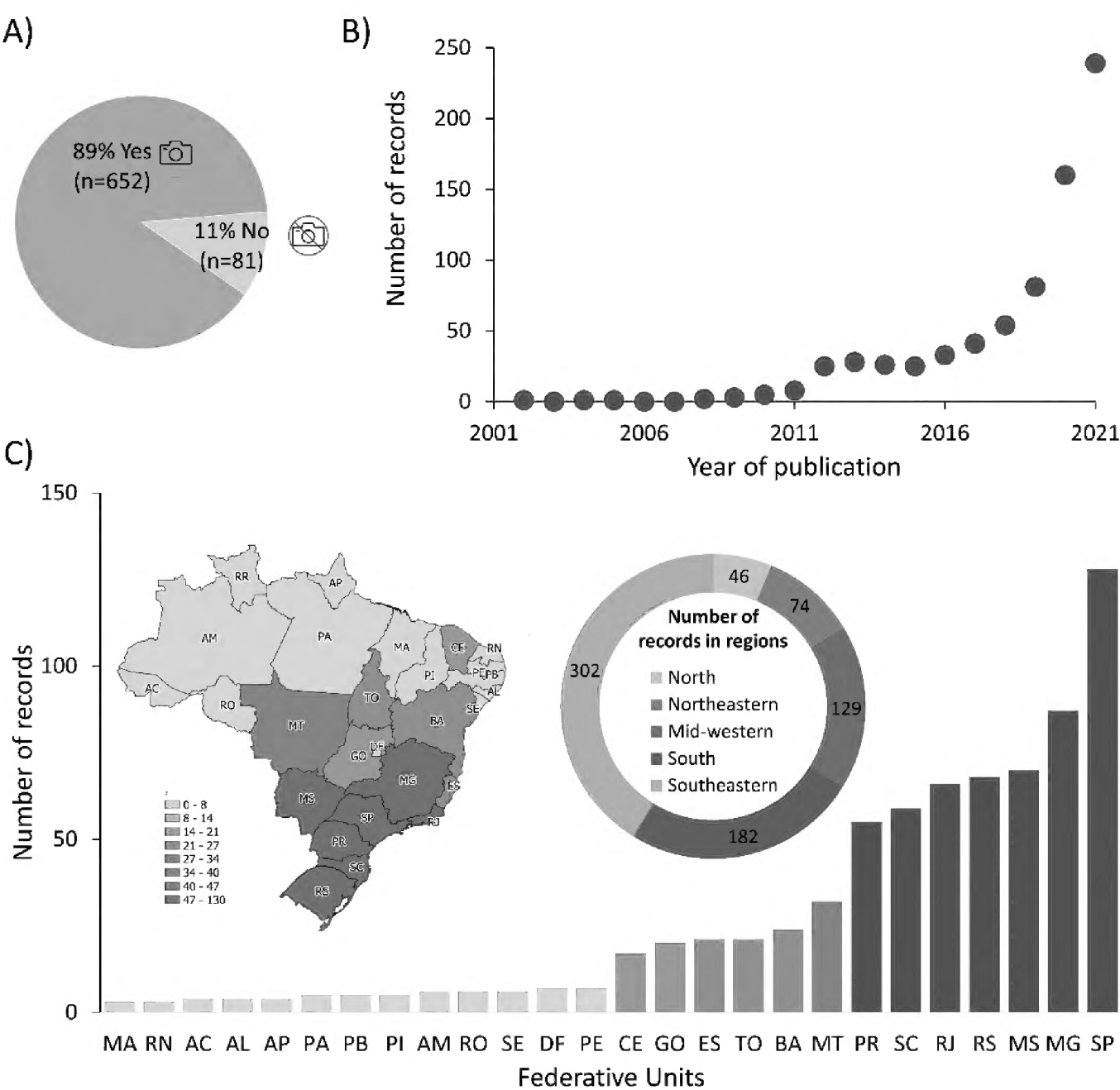


Figure 1. Number of photographic (A), temporal (B) and spatial (C) records of mammalian species in urban areas of Brazil.

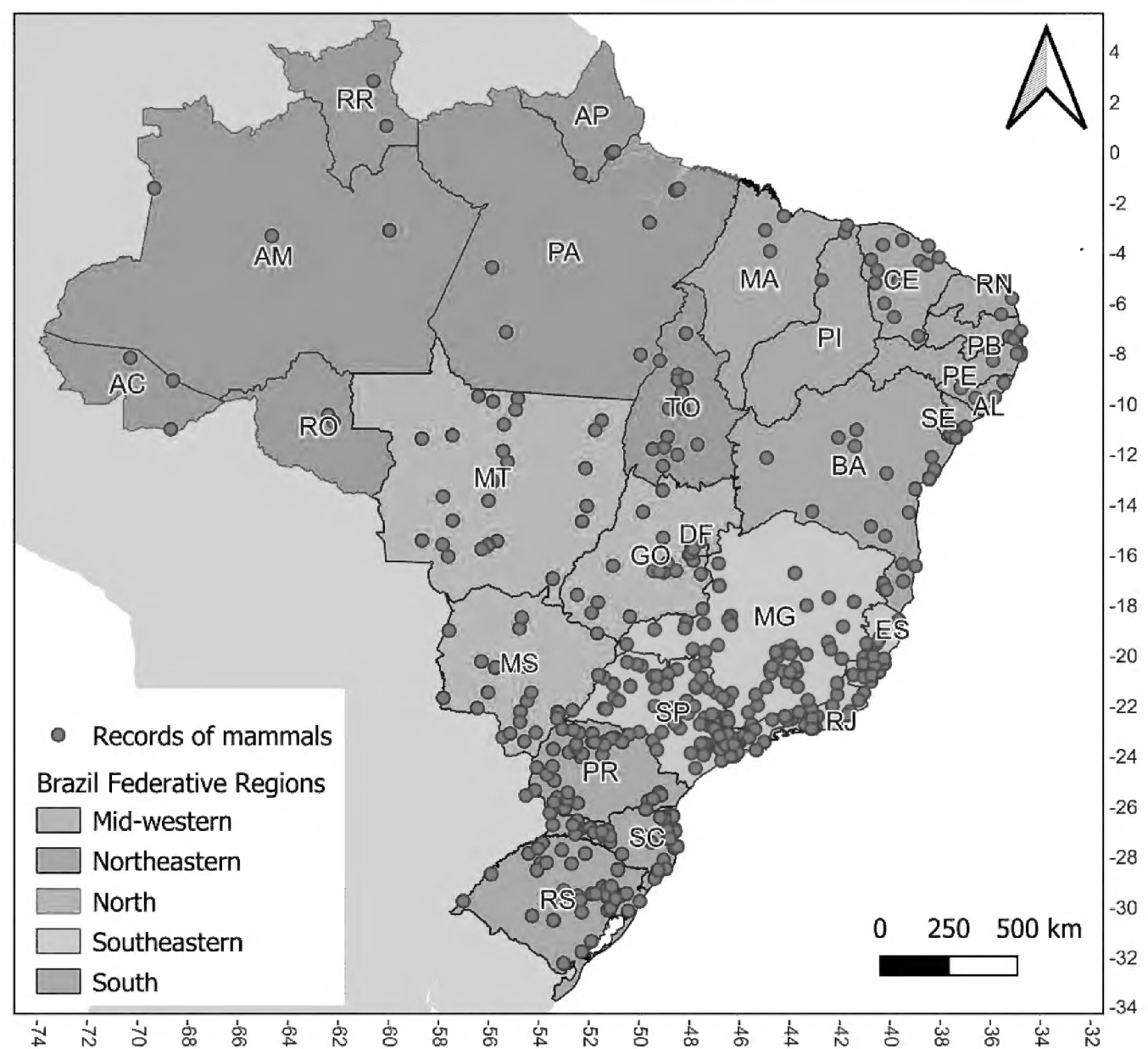


Figure 2. Geographic distribution of mammal occurrence records in Brazilian urban areas, categorized by federative regions.

Our data demonstrate a geographic bias in media reports on human-mammal encounters in urban areas (Figs 1, 2). The regions showing the highest number of records are economically more developed compared to other areas of the country (Saraiva, Souza, 2012). Consequently, these regions have greater media coverage. One recommendation to reduce this bias is to foster stronger communication between scientists and the media, along with more studies to investigate public perception of wildlife and interpretation of media events. Additionally, increased investment in communication, education, and public awareness programs could help rebalance both media and public perception (Bornatowski et al. 2019).

Of the total 733 records, we found 55 species, 22 families and 10 orders of mammals in urban areas of Brazil (Table 2). Carnivora ($N = 399$ records, 19 species) was the more representative order, followed by Rodentia (93, 11 spp.), Pilosa (92, 4 spp.), Cetartiodactyla (52, 4 spp.), Didelphimorphia (35, 4 spp.), Primates (29, 5 spp.), Cingulata (17, 6 spp.), Perissodactyla (13, 1 sp.), Lagomorpha (2, 1 sp.) and Chiroptera (1, 1 sp.). Felidae and Canidae comprised 48% of records ($N = 353$); Felidae occur in 96% of localities (Fig. 3).

The Ocelot, Puma, Southern Tamandua, Maned Wolf, Crab-eating Fox, Gray Brocket, and Capybara reach more than 30 records and represented 49% of mammalian fauna in urban areas from Brazil (Fig. 4). Of the total species recorded in urban areas, 32.7% are threatened according Brazilian Red List (MMA 2022), highlighted by the orders: Carnivora (Maned Wolf *Chrysocyon brachyurus*, Hoary Fox *Lycalopex vetulus*, Bush Dog *Speothos venaticus*, Margay *Leopardus wiedii*, Southern Tiger Cat *L. guttulus*, Jaguar *Panthera onca*, Jaguarundi *Herpailurus yagouaroundi* and Giant Otter *Pteronura brasiliensis*), Cingulata (Giant Armadillo *Priodontes maximus* and Brazilian Three-banded Armadillo *Tolypeutes tricinctus*), Pilosa (Giant Anteater *Myrmecophaga tridactyla* and Maned Three-toed Sloth *Bradypus torquatus*), Primates (Brown Howler Monkey *Alouatta guariba* and Buffy-tufted-ear Marmoset *Callithrix aurita*), Perissodactyla (Lowland Tapir *Tapirus terrestris*) and Cetartiodactyla (White-lipped Peccary *Tayassu pecari*) (Fig. 4).

The species accumulation curve (Fig. 5) provides validation for using this dataset to make inferences about mammal diversity in urban areas within the sampled context. The curve shows a gradual plateau, indicating that a sufficient sampling effort (in terms of the number of cities) has been reached to capture the diversity most frequently reported in the media. However, we acknowledge that the data carry an inherent media bias, favoring reports of mammals that capture public attention—typically emblematic, charismatic, and vulnerable species more likely to be impacted by human activities. This is because, for an event to become newsworthy, it must hold relevance from the media's perspective, drawing public attention (Freitas and Barszcz 2015; Shaw et al. 2022).

Thus, the media focus on these specific species is a reflection of journalistic trends rather than a methodological flaw in the study. Although this bias may prevent uniform records across all species, the accumulation curve suggests that the data collected still provide a legitimate basis for understanding broader trends. It serves as a valuable repository of information on the increasing frequency of human-wildlife interactions in urban areas, opening pathways for further discussions on how media coverage influences public perception of urban wildlife. While this dataset may not fully reflect the actual diversity or abundance of species in urban areas, it highlights patterns in human-wildlife relationships shaped by media representation, offering an opportunity for future analyses of these dynamics.

Table 2. Systematic list of mammal species in urban areas of Brazil. Brazilian states legend: Acre (AC), Alagoas (AL), Amapá (AP), Amazonas (AM), Bahia (BA), Ceará (CE), Distrito Federal (DF), Espírito Santo (ES), Goiás (GO), Maranhão (MA), Mato Grosso (MT), Mato Grosso do Sul (MS), Minas Gerais (MG), Pará (PA), Paraíba (PB), Paraná (PR), Pernambuco (PE), Piauí (PI), Rio de Janeiro (RJ), Rio Grande do Norte (RN), Rio Grande do Sul (RS), Rondônia (RO), Roraima (RR), Santa Catarina (SC), São Paulo (SP), Sergipe (SE), Tocantins (TO).

Taxon	Common Name	Federative Unit
DIDELPHIMORPHIA Gill, 1872		
Didelphidae Gray, 1821		
<i>Caluromys philander</i> (Linnaeus, 1758)	Bare-tailed Woolly Opossum	ES
<i>Didelphis albiventris</i> Lund, 1840	White-eared Opossum	DF, MG, MS, PR, RS, SC, SP
<i>Didelphis aurita</i> (Wied-Neuwied, 1826)	Big-eared Opossum	ES, MG, RJ, RS, SC, SP
<i>Philander canus</i> (Osgood, 1913)	Gray Four-eyed Opossum	GO
CINGULATA Illiger, 1811		
Chlamyphoridae Bonaparte, 1850		
<i>Euphractus sexcinctus</i> (Linnaeus, 1758)	Six-banded Armadillo	ES, MS, TO
<i>Cabassous tatouay</i> (Desmarest, 1804)	Southern Naked-tailed Armadillo	RJ
<i>Priodontes maximus</i> (Kerr, 1792)	Giant Armadillo	TO
<i>Tolypeutes matacus</i> (Desmarest, 1804)	Southern Three-banded Armadillo	MS
<i>Tolypeutes tricinctus</i> (Linnaeus, 1758)	Brazilian Three-banded Armadillo	CE
Dasypodidae Gray, 1821		
<i>Dasypus novemcinctus</i> Linnaeus, 1758	Nine-banded Armadillo	AC, MG, MS, PR, RJ, RS
PILOSA Flower, 1883		
Bradypodidae Gray, 1821		
<i>Bradypus (Scaeopus) crinitus</i> Gray, 1850	Maned Three-toed Sloth	RJ
<i>Bradypus (Bradypus) variegatus</i> Schinz, 1825	Brown-throated Three-toed Sloth	AM, BA, CE, MG, PE, RJ, SC, SP
Myrmecophagidae Gray, 1825		
<i>Myrmecophaga tridactyla</i> Linnaeus, 1758	Giant Anteater	GO, MG, MS, MT, RR, SP, TO
<i>Tamandua tetradactyla</i> (Linnaeus, 1758)	Southern Tamandua	AM, AP, BA, CE, ES, MG, MS, MT, PR, RJ, RN, RS, SC, SP, TO
PRIMATES Linnaeus, 1758		
Atelidae Gray, 1825		
<i>Alouatta caraya</i> (Humboldt, 1812)	Black-and-gold Howler Monkey	GO, MS, RS
<i>Alouatta guariba</i> (Humboldt, 1812)	Brown Howler Monkey	MG, PR, RJ, RS, SC, SP
Cebidae Bonaparte, 1831		
<i>Callithrix aurita</i> (É. Geoffroy St.-Hilaire, 1812)	Buffy-tufted-ear Marmoset	RJ
<i>Callithrix penicillata</i> (É. Geoffroy St.-Hilaire, 1812)	Black-pencilled Marmoset	MG, PR
<i>Saimiri collinsi</i> Osgood, 1916	American Squirrel Monkey	MA
RODENTIA Bowdich, 1821		
Caviidae Fischer, 1817		
<i>Hydrochoerus hydrochaeris</i> (Linnaeus, 1766)	Capybara	DF, ES, GO, MS, MT, PE, RJ, RN, RS, SC, SE, SP, TO
Cuniculidae G. S. Miller & Gidley, 1918		
<i>Cuniculus paca</i> (Linnaeus, 1766)	Lowland Paca	GO, MG, PR
Dasyproctidae Bonaparte, 1838		
<i>Dasyprocta azarae</i> Lichtenstein, 1823	Azara's Agouti	MS
<i>Myoprocta pratti</i> Pocock, 1913	Green Acouchi	AM

Taxon	Common Name	Federative Unit
Dinomyidae Alston, 1876		
<i>Dinomys branickii</i> Peters, 1873	The Pacarana	AC
Echimyidae Gray, 1825		
<i>Myocastor coypus</i> (Molina, 1782)	Coypu, Nutria, River rat. The Nutria	PR, RS
Erethizontidae Bonaparte, 1845		
<i>Chaetomys subspinosus</i> (Olfers, 1818)	Bristle-spined Rat	BA
<i>Coendou prehensilis</i> (Linnaeus, 1758)	Brazilian Porcupine	CE, DF, MG, MS, PR, RJ, RO, RS, SC, SP, TO
<i>Coendou spinosus</i> (Cuvier, 1823)	Paraguayan Hairy Dwarf Porcupine	ES, MG, RJ, RS, SP
Sciuridae Fischer, 1817		
<i>Guerlinguetus aestuans</i> (Linnaeus, 1766)	Guianan Squirrel	RS
<i>Guerlinguetus brasiliensis</i> (Gmelin, 1788)	Ingram’s squirrel	BA, PR, RJ, SC
CARNIVORA Bowdich, 1821		
Canidae Fischer, 1817		
<i>Cerdocyon thous</i> (Linnaeus, 1766)	Crab-eating Fox	BA, CE, DF, ES, MA, MG, MS, PR, RJ, RS, SC, SE, SP
<i>Chrysocyon brachyurus</i> (Illiger, 1815)	Maned Wolf	GO, MG, MS, MT, PI, PR, RJ, SP, TO
<i>Lycalopex vetulus</i> (Lund, 1842)	Hoary Fox	GO, MG, SP, TO
<i>Lycalopex gymnocercus</i> (Fischer, 1814)	The Pampas Fox	RS
<i>Speothos venaticus</i> (Lund, 1842)	Bush Dog	MS, MT
Felidae Fischer, 1817		
<i>Herpailurus yagouaroundi</i> (É. Geoffroy Saint-Hilaire, 1803)	Jaguarundi	BA, CE, DF, MG, MS, MT, PA, PE, RS
<i>Leopardus guttulus</i> (Hensel, 1872)	Southern Tiger Cat	ES, MG, PR, RS, SC, SP
<i>Leopardus pardalis</i> (Linnaeus, 1758)	Ocelot	AC, AL, BA, CE, ES, GO, MG, MS, MT, PA, PB, PE, PI, PR, RJ, RS, SC, SE, SP, TO
<i>Leopardus tigrinus</i> (Schreber, 1775)	Little Spotted Cat	CE, PB
<i>Leopardus wiedii</i> (Schinz, 1821)	Margay	AL, AM, AP, MA, PR, RS, SC, SP
<i>Puma concolor</i> (Linnaeus, 1771)	Puma	BA, ES, GO, MG, MS, MT, PA, PR, RJ, SC, SP, TO
<i>Panthera onca</i> (Linnaeus, 1758)	Jaguar	AL, AM, GO, MG, MS, MT, PR, RR, SP, TO
Mustelidae Fischer, 1817		
<i>Eira barbara</i> (Linnaeus, 1758)	Tayra	RS
<i>Galictis cuja</i> (Molina, 1782)	Lesser Grison	MG, PR, RS, SC, SE, SP
<i>Pteronura brasiliensis</i> (Zimmermann, 1780)	Giant Otter	AM, TO
<i>Lontra longicaudis</i> (Olfers, 1818)	River Otter	AP, BA, MS
Procyonidae Gray, 1825		
<i>Nasua nasua</i> (Linnaeus, 1766)	South American Coati	BA, ES, MG, MS, MT, PB, PE, PR, RJ, RS, SP
<i>Potos flavus</i> (Schreber, 1774)	Kinkajou	RJ, RO
<i>Procyon cancrivorus</i> (Cuvier, 1798)	Crab-eating Raccoon	MG, MT, RS, SC, SP
PERISSODACTYLA Owen, 1848		
Tapiriidae Gray, 1821		
<i>Tapirus terrestris</i> (Linnaeus, 1758)	Lowland Tapir	MG, MS, MT, SP
CETARTIODACTYLA Montgelard, Catzefflis & Douzery, 1997		
Cervidae Goldfuss, 1820		
<i>Mazama rufa</i> (Erxleben, 1777)	Red Brocket	DF, ES, MG, MS, MT, SP, TO
<i>Subulo gouazoubira</i> (Fischer, 1814)	Gray Brocket	BA, CE, ES, GO, MG, MS, MT, PR, RS, SC, SP, TO
Tayassuidae Palmer, 1897		
<i>Dicotyles tajacu</i> (Linnaeus, 1758)	Collared Peccary	MT, TO
<i>Tayassu pecari</i> (Link, 1795)	White-lipped Peccary	MS

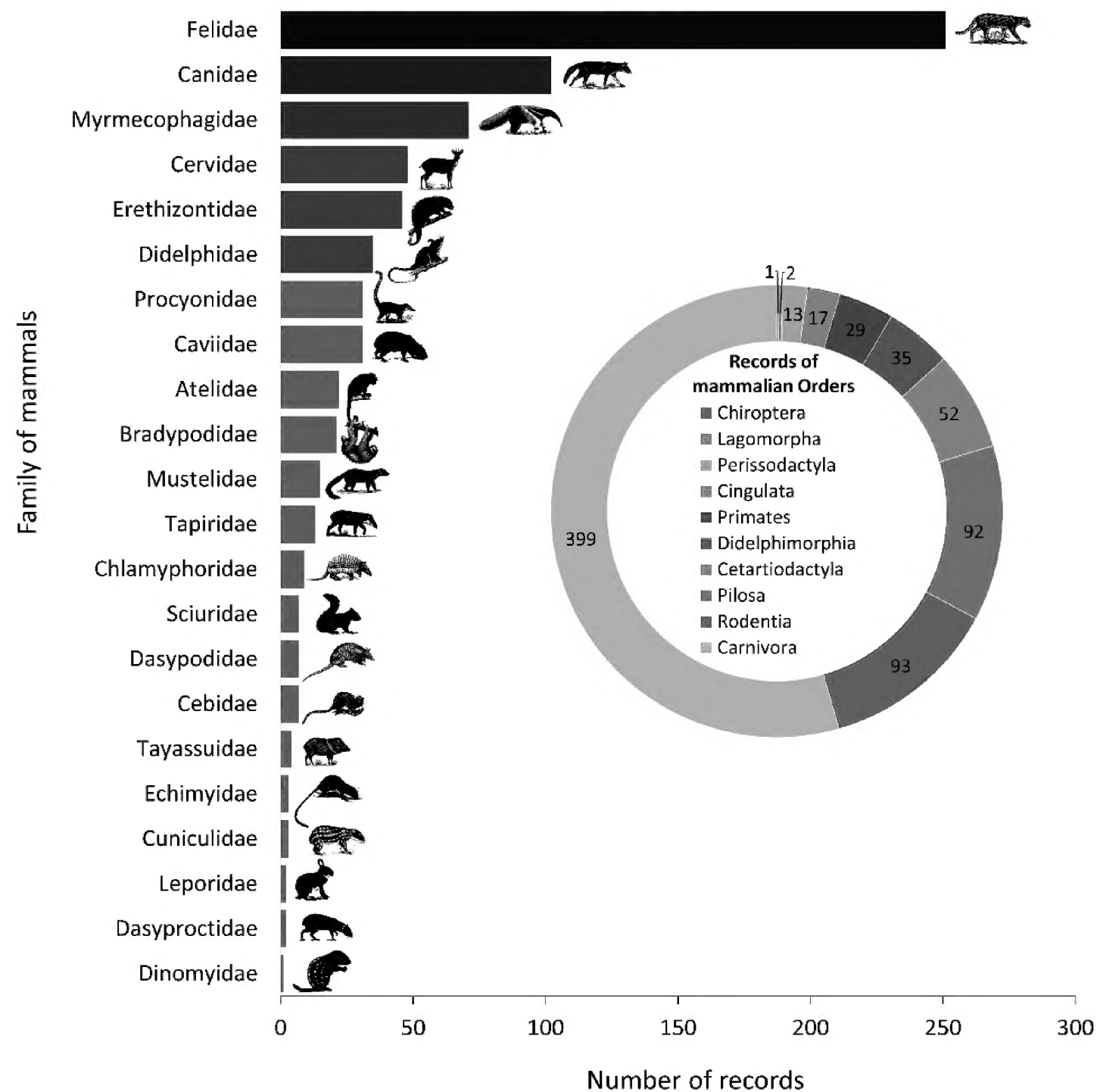


Figure 3. Number of records by orders (pie plot) and families (bar plot) of mammals in urban areas of Brazil.

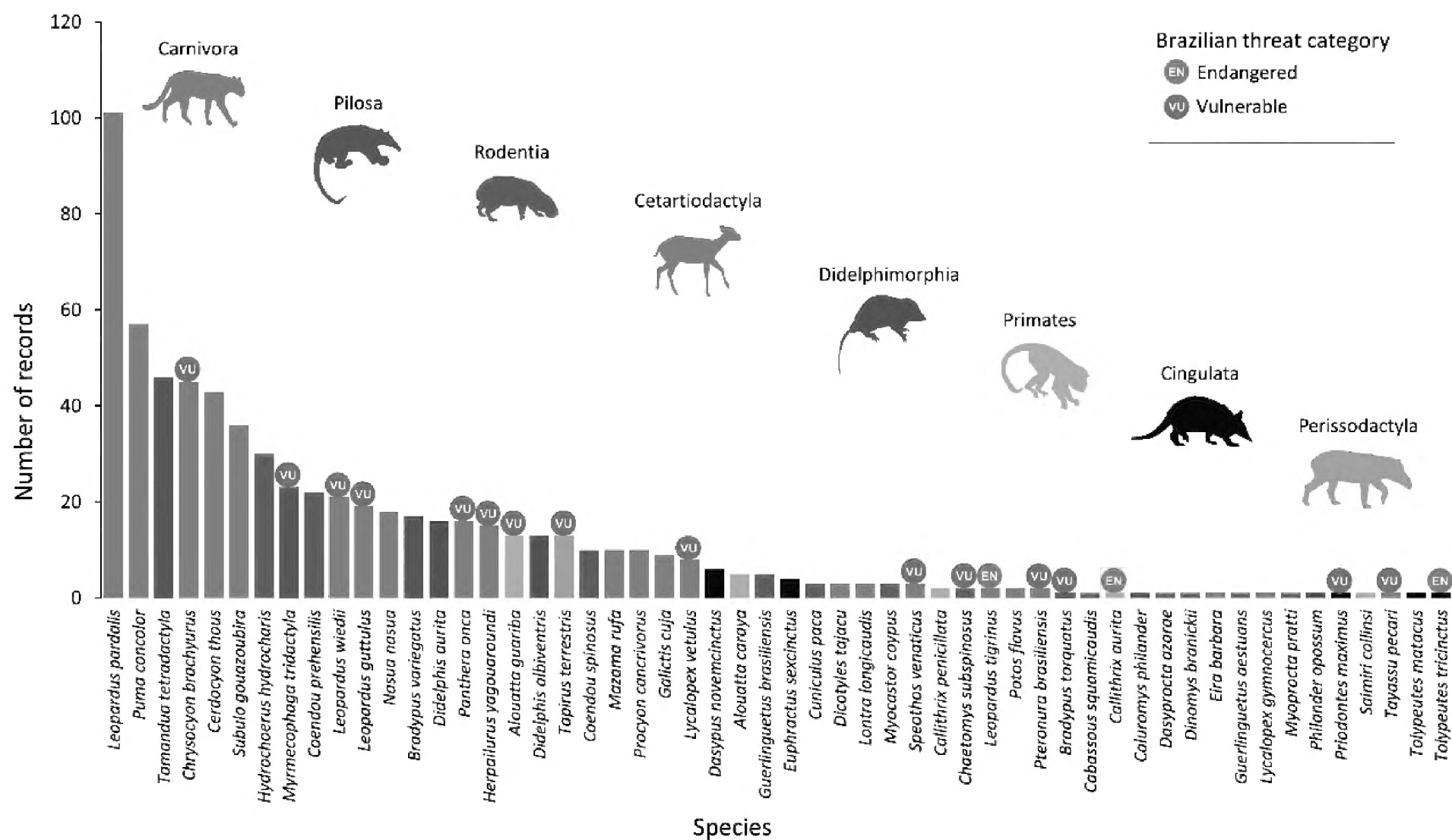


Figure 4. Number of records by species of mammals in urban areas of Brazil.

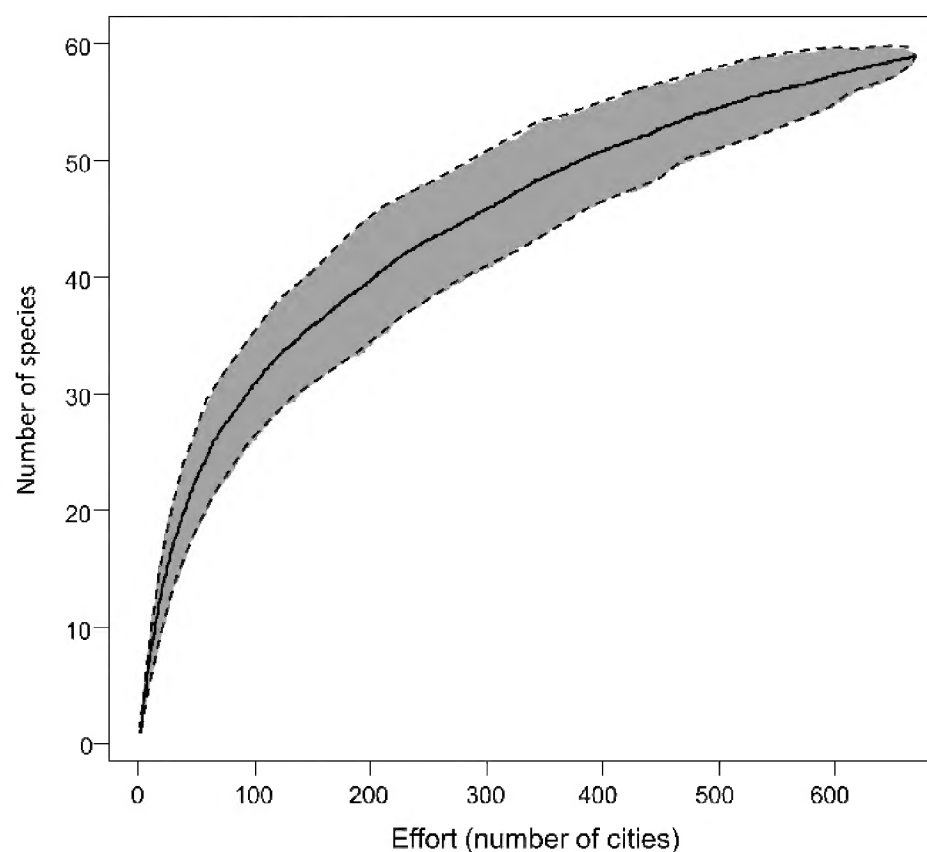


Figure 5. Collector's curve showing species accumulation with increasing sampling effort across urban areas.

Based on reports gathered through the media, the locations with the highest number of mammal sightings in urban centers are streets (280 records), followed by residential properties (191), highways (116), parks (41), businesses (33), gated communities (19), vacant lots (9), schools (5), hospitals (5), airports (2), churches (2), rivers (2), hotels (1), banks (1), nursing homes (1), universities (1), and gardens (1). Other reports did not specify where the animals were sighted or found. After being located, 292 records indicate that the mammals were sent for rehabilitation, with 188 of these animals found injured and 99 fatalities recorded.

Regarding interactions, not all reports included information on conflicts or relationships beyond encounters between humans and wildlife. The recorded interactions include road accidents (108), conflicts with dogs (16), predation of domestic animals (10), retaliation (4), electric shocks (3), intentional feeding (3), poisoning (2), nuisance wildlife (2), mutilation (1), and crop damage (1). Interactions between humans and wild animals, particularly mammals, are diverse and complex, often resulting in conflicts. Both habitat loss due to urbanization and agricultural expansion, along with the presence of urban parks, contribute to these conflicts (Griffin et al. 2022; Adhikari et al. 2024). The majority of records (679) are from urban areas, as the database focuses on mammals in urban centers.

Final considerations

Compiling information on all mammal species found in urban centers into a single document is particularly challenging for several reasons: i) sites with incomplete information, ii) incorrectly identified animals, iii) sites with technical problems, and iv) poor-quality photos and videos.

Even so, our dataset reflects the number of mammal records in urban centers in Brazil. This is the first study to utilize websites to diagnose the mammal fauna present in urban centers in Brazil. The dataset generated here could help us understand the occurrence of mammal species in urban environments and serve as a foundation for future studies related to urban landscape ecology and its implications for the distribution and conservation of mammals in these environments.

Additional information

Conflict of interest

The authors have declared that no competing interests exist.

Ethical statement

No ethical statement was reported.

Funding

Funding was provided by Universidade Estadual de Goiás, CAPES and FAPEG (CA, protocol: 000023816369; 202310267001313), Conselho Nacional de Desenvolvimento Científico e Tecnológico/CNPq (WH, process no: 302443/2022-3). Pró-Programas Resource, Universidade Estadual de Goiás 2023.

Author contributions

WH – originally formulated the idea, performed descriptive analyses; CA – data collected. All authors added substantial contribution in the concept and design of the study. Contribution to critical revision, adding intellectual content.

Author ORCIDs

Carolina Alves  <https://orcid.org/0000-0003-0501-3532>

Wellington Hannibal  <https://orcid.org/0000-0001-7141-1243>

Data availability

Data published through figshare: https://figshare.com/articles/dataset/_b_MAMMALS_IN_URBAN_CENTERS_a_dataset_for_Brazil_b_/26616214.

References

- Abreu EF, Casali D, Costa-Araújo R, Garbino GST, Libardi GS, Loretto D, Loss AC, Marmontel M, Moras LM, Nascimento MC, Oliveira ML, Pavan SE, Tirelli FP (2022) Lista de Mamíferos do Brasil. <https://doi.org/10.5281/ZENODO.10428436>
- Adhikari JN, Bhattarai BP, Thapa TB (2024) Correlates and impacts of human-mammal conflict in the central part of Chitwan Annapurna Landscape, Nepal. *Heliyon* 10(4): e26386. <https://doi.org/10.1016/j.heliyon.2024.e26386>
- Aronson MF, La Sorte FA, Nilon CH, Katti M, Goddard MA, Lepczyk CA, Warren PS, Williams NS, Cilliers S, Clarkson B, Dobbs C, Dolan R, Hedblom M, Klotz S, Kooijmans JL, Kühn I, Macgregor-Fors I, McDonnell M, Mörtberg U, Pysek P, Siebert S, Sushinsky J, Werner P, Winter M (2014) A global analysis of the impacts of urbanization on bird and plant diversity reveals key anthropogenic drivers. *Proceedings of the Royal Society B: Biological Sciences* 281(1780): 20133330. <https://doi.org/10.1098/rspb.2013.3330>
- Azevedo N, Oliveira M, Duarte J (2021) Guia ilustrado dos cervídeos brasileiros. Sociedade Brasileira de Mastozoologia. <https://doi.org/10.32673/9788563705037>
- Basak, SM, Wierzbowska IA, Gajda A, Czarnoleski M, Lesiak M, Widera E (2020) Human-Wildlife Conflicts in Krakow City, Southern Poland. <https://doi.org/10.3390/ani10061014>
- Bateman PW, Fleming PA (2012) Big city life: carnivores in urban environments. *Journal of Zoology* 287(1): 1–23. <https://doi.org/10.1111/j.1469-7998.2011.00887.x>

- Bonvicino CR, Oliveira JA, D'Andrea PS (2008) Guia dos roedores do Brasil, com chaves para gêneros baseadas em caracteres externos. <https://iris.paho.org/handle/10665.2/49675> [June 25, 2024]
- Bornatowski H, Hussey NE, Sampaio CL, Barreto RR (2019). Geographic bias in the media reporting of aquatic versus terrestrial human predator conflicts and its conservation implications. *Perspectives in Ecology and Conservation* 17(1): 32–35. <https://doi.org/10.1016/j.pecon.2018.12.004>
- Ceballos G, Ehrlich PR (2002) Mammal population losses and the extinction crisis. *Science* (New York, N.Y.) 296: 904–907. <https://doi.org/10.1126/science.1069349>
- Ceballos G, Garcia A, Ehrlich P (2010) The sixth extinction crisis. *Journal of Cosmology* 2, 452: 180–185.
- Ceballos G, Ehrlich PR, Barnosky AD, Gacia A, Pringle RM, Palmer TM (2024) Accelerated modern human-induced species losses: Entering the sixth mass extinction | *Science Advances*. <https://www.science.org/doi/full/10.1126/sciadv.1400253> [June 25, 2024]
- Faria MB, Lanes RO, Bonvicino CR (2019) Guia dos marsupiais no Brasil: guia de identificação com base em caracteres morfológicos externos e cranianos. Amélie Editorial.
- Freitas SD, Barszcz LB (2015) A perspectiva da mídia online sobre os acidentes entre veículos e animais em rodovias brasileiras: uma questão de segurança. *Desenvolvimento e Meio Ambiente* 33: 261–276. <https://doi.org/10.5380/dma.v33i0.36910>
- Griffin LL, Haigh A, Conteddu K, Andaloc M, McDonnell P, Ciuti S (2022) Reducing risky interactions: Identifying barriers to the successful management of human-wildlife conflict in an urban parkland. *People and Nature* 4(4): 918–930. <https://doi.org/10.1002/pan3.10338>
- IBGE Áreas Territoriais (2022) IBGE. <https://www.ibge.gov.br/geociencias/organizacao-do-territorio/estrutura-territorial/15761-areas-dos-municipios.html> [June 25, 2024a]
- IBGE [Fauna Ameaçada de Extinção] (2022) IBGE. <https://educa.ibge.gov.br/jovens/materias-especiais/22384-especies-ameacadas-de-extincao.html#:~:text=S%C3%A3o%20mais%20de%2050%20mil,no%20territ%C3%B3rio%20brasileiro%20at%C3%A9%202022> [June 25, 2024b]
- IUCN (2022) The IUCN Red List of Threatened Species. Version 2022. <https://www.iucnredlist.org>
- Marchini, S, Crawshaw Jr P (2015) Human-Wildlife Conflicts in Brazil: A Fast-Growing Issue. <https://doi.org/10.1080/10871209.2015.1004145> [June 25, 2024]
- McDonald RI, Marcotullio PJ, Güneralp B (2013) Urbanization and global trends in biodiversity and ecosystem services. In: Elmqvist T, Fragkias M, Goodness J, Güneralp B, Macotullio PJ, McDonald RI, Panell S, Schewenius M, Sendstad M, Seto KC, Wilkinson C (Eds) *Urbanization, biodiversity and ecosystem services: challenges and opportunities: a global assessment*. Springer: Dordrecht, The Netherlands, 31–52. https://doi.org/10.1007/978-94-007-7088-1_3
- Menezes FH, Feijó A, Fernandes-Ferreira H, Da Costa IR, Cordeiro-Estrela P (2021) Integrative systematics of Neotropical porcupines of *Coendou prehensilis* complex (Rodentia: Erethizontidae). *Journal of Zoological Systematics and Evolutionary Research* 59: 2410–2439. <https://doi.org/10.1111/jzs.12529>
- MMA (2022) Portaria MMA nº 148, de 7 de junho de 2022. https://www.icmbio.gov.br/cepsul/images/stories/legislacao/Portaria/2020/P_mma_148_2022_altera_anexos_P_mma_443_444_445_2014_atualiza_especies_ameacadas_extincao.pdf

- MMA Biomas (2024) Ministério do Meio Ambiente e Mudança do Clima. <https://www.gov.br/mma/pt-br/assuntos/biodiversidade-e-ecossistemas/ecossistemas/biomas/biomas> [June 25, 2024a]
- MMA Clima (2024) Ministério do Meio Ambiente e Mudança do Clima. <https://www.gov.br/mma/pt-br/assuntos/mudanca-do-clima/clima/mudancasclimaticas> [June 25, 2024b]
- Nascimento FO do, Feijó A (2017) Taxonomic revision of the tigrina *Leopardus tigrinus* (Schreber, 1775) species group (Carnivora, Felidae). *Papéis Avulsos de zoologia* 57: 231–264. <https://doi.org/10.11606/0031-1049.2017.57.19>
- Perry G, Boal C, Verble R, Wallace M (2020) “Good” and “Bad” Urban Wildlife. *Problematic Wildlife II*, 141–170. https://doi.org/10.1007/978-3-030-42335-3_5
- Prezoto F, Vale A (2019) *Fauna Urbana: Quem Vive Aqui?* 33: 119–146.
- Reis NR, Peracchi AL, Pedro WA, Lima IP (2011) *Mamíferos do Brasil*. 2a edição. Universidade Estadual de Londrina, Londrina, Brazil, 439 pp.
- Rumiz D, Boron V, Rivera-Brusatin A, Holzmann A, Payán-Garrido E, Gasparini-Morato RL, Paula RC, Morato RG, Ferreira JM, Feliciani F, Foster VC, Reginato T, Kotz A, Oliveira TG, Barros YM (2022) Guia de identificação de partes de felinos, Brasil. *ICMBio*, 116 pp.
- Saraiva KR, Souza FS (2012) Estatísticas sobre irrigação nas regiões Sul e Sudeste do Brasil segundo o censo agropecuário 2005–2006. *IRRIGA* 17(2): 168–176. <https://doi.org/10.15809/irriga.2012v17n2p168>
- Schenk AN, Souza MJ (2014) Major anthropogenic causes for and outcomes of wild animal presentation to a wildlife clinic in East Tennessee, USA, 2000–2011. *PLoS ONE* 9: e93517. <https://doi.org/10.1371/journal.pone.0093517>
- Seto KC, Golden JS, Alberti M, Turner BL (2017) Sustainability in an urbanizing planet. *Proceedings of the National Academy of Sciences* 114: 8935–8938. <https://doi.org/10.1073/pnas.1606037114>
- Shaw MN, Borrie WT, McLeod EM, Miller KK (2022) Wildlife Photos on Social Media: A Quantitative Content Analysis of Conservation Organisations’ Instagram Images. *Animals* 12(14):1787. <https://doi.org/10.3390/ani12141787>
- Start D, Barbour MA, Bonner C (2020) Urbanization reshapes a food web. In: Rodriguez-Cabal M (Ed.) *Journal of Animal Ecology* 89: 808–816. <https://doi.org/10.1111/1365-2656.13136>
- Taylor-Brown A, Booth R, Gillett A, Mealy E, Ogbourne SM, Polkinghorne A, Conroy GC (2019) The impact of human activities on Australian wildlife. *PloS ONE* 14: e0206958. <https://doi.org/10.1371/journal.pone.0206958>
- Theodorou P (2022) The effects of urbanisation on ecological interactions. *Current Opinion in Insect Science* 52: 100922. <https://doi.org/10.1016/j.cois.2022.100922>
- Van Bommel JK, Badry M, Ford AT, Golumbia T, Burton AC (2020) Predicting human-carnivore conflict at the urban-wildland interface. *Global Ecology and Conservation* 24: e01322. <https://doi.org/10.1016/j.gecco.2020.e01322>
- Zimmermann A, Baker N, Inskip C, Linnell JD, Marchini S, Odden J, Rasmussen G, Treves A (2010) Contemporary views of human-carnivore conflicts on wild rangelands. In: Du Toit JT, Kock R, Deutsch JC (Eds) *Wild rangelands: Conserving wildlife while maintaining livestock in semi-arid ecosystems*, Wiley-Blackwell, Oxford, 129–151. <https://doi.org/10.1002/9781444317091.ch6>